

SEQUENCE LISTING

<110> Takeda Chemical Industries, Ltd.

<120> Betacellulin Mutein

<130> 2576WOOP

<150> JP 10-350377

<151> 1998-12-09

<150> JP 11-55326

<151> 1999-03-03

<160> 56

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<212> PRT

<213> Artificial Sequence

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Gly	His	Phe	Ser	Arg	Cys	Pro	Lys	Gln	Tyr	Lys	His	Tyr	Cys	Ile	Lys
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Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys
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			20					25					30		
Gly	His	Phe	Ser	Arg	Cys	Pro	Lys	Gln	Tyr	Lys	His	Tyr	Cys	Ile	Lys
		35					40					45			
Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys
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 Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp
 35 40 45

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 20 25 30
 Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val
 35 40 45

<210> 5
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 35 40 45
 Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys
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 Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Leu Phe Tyr
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 Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys
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 Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys

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Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys				
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			20					25					30						
Gly	His	Phe	Ser	Arg	Cys	Pro	Lys	Gln	Tyr	Lys	His	Tyr	Cys	Ile	Lys				
		35					40					45							
Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys				
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			20					25					30						
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Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys				
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			20					25					30				
Gly	His	Phe	Ser	Arg	Cys	Pro	Lys	Gln	Tyr	Lys	His	Tyr	Cys	Ile	Lys		
		35					40					45					
Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys		
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<212> PRT

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			20					25				30					
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Tyr

<210> 11

<211> 48

<212> PRT

<213> Artificial Sequence

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Ile	Lys	Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys		
			20					25				30					
Val	Cys	Asp	Glu	Gly	Tyr	Ile	Gly	Ala	Arg	Cys	Glu	Arg	Val	Leu	Phe		
		35					40					45					

<210> 12

<211> 47

<212> PRT

<213> Artificial Sequence

<400> 12

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Ile	Lys	Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys		
			20					25				30					
Val	Cys	Asp	Glu	Gly	Tyr	Ile	Gly	Ala	Arg	Cys	Glu	Arg	Val	Leu			
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 Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Phe
 35 40 45

Tyr

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 Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Phe
 35 40 45

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 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC
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 TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTGA C
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CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC
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 TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTT
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 <211> 141
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 TGCCGCTTCG TGGTGGCCGA GCAGACGCCC TCCTGTGTCT GTGATGAAGG CTACATTGGA
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 GCAAGGTGTG AGAGAGTTGA C
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 <210> 18
 <211> 138
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 GCAAGGTGTG AGAGAGTT
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 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC
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 <211> 234
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 120
 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC
 180
 TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTTT GTTT
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 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC
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 120
 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC
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 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC
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 TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTGA CTTT
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 GCAAGGTGTG AGAGAGTTTT GTTTTAC
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 <211> 144
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 GCAAGGTGTG AGAGAGTTGA CTTT
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22

<210> 33

<211> 26

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<400> 33

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26

<210> 34

<211> 22

<212> DNA

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22

<210> 35

<211> 80

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<213> Human

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		20						25				30			

Gly	His	Phe	Ser	Arg	Cys	Pro	Lys	Gln	Tyr	Lys	His	Tyr	Cys	Ile	Lys
		35					40					45			

Gly	Arg	Cys	Arg	Phe	Val	Val	Ala	Glu	Gln	Thr	Pro	Ser	Cys	Val	Cys
	50					55					60				

Asp	Glu	Gly	Tyr	Ile	Gly	Ala	Arg	Cys	Glu	Arg	Val	Asp	Leu	Phe	Tyr
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<211> 240

<212> DNA

<213> Human

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CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGACGCCC

180

TCCTGTGTCT GTGATGAAGG CTACATTGGA GCAAGGTGTG AGAGAGTTGA CTTGTTTTAC

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 His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys Gly
 35 40 45
 Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys Asp
 50 55 60
 Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val
 65 70 75
 <210> 38
 <211> 53
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 Lys Gln Tyr Lys His Tyr Cys Ile Lys Gly Arg Cys Arg Phe Val Val
 20 25 30
 Ala Glu Gln Thr Pro Ser Cys Val Cys Asp Glu Gly Tyr Ile Gly Ala
 35 40 45
 Arg Cys Glu Arg Val
 50 53
 <210> 39
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 120
 TACAAGCATT ACTGCATCAA AGGGAGATGC CGCTTCGTGG TGGCCGAGCA GACGCCCTCC
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 Val Asp Leu Phe Tyr
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 <210> 45

<211> 48
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 <213> Artificial Sequence
 <400> 45
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 Gly Arg Cys Arg Phe Val Val Ala Glu Gln Thr Pro Ser Cys Val Cys
 20 25 30
 Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp Leu Phe Tyr
 35 40 45
 <210> 46
 <211> 83
 <212> PRT
 <213> Artificial Sequence
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 Asp Pro Glu Glu Asn Cys Ala Ala Thr Thr Thr Gln Ser Lys Arg Lys
 20 25 30
 Gly His Phe Ser Arg Cys Pro Lys Gln Tyr Lys His Tyr Cys Ile Lys
 35 40 45
 Gly Arg Cys Arg Phe Val Val Ala Glu Gln Asn Pro Ser Thr Pro Ser
 50 55 60
 Cys Val Cys Asp Glu Gly Tyr Ile Gly Ala Arg Cys Glu Arg Val Asp
 65 70 75 80
 Leu Phe Tyr
 <210> 47
 <211> 249
 <212> DNA
 <213> Artificial Sequence
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 120
 CAATACAAGC ATTACTGCAT CAAAGGGAGA TGCCGCTTCG TGGTGGCCGA GCAGAACCCC
 180
 TCGACGCCCT CCTGTGTCTG TGATGAAGGC TACATTGGAG CAAGGTGTGA GAGAGTTGAC
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<212> DNA
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 TACATTGGAG CAAGGTGTGA GAGAGTTGAC TTGTTTTAC
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 TGTGAGAGAG TTGACTTGTT TTAC
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35